ART. XII. NOTES ON A COLLECTION OF REPTILES FROM BARRO COLORADO ISLAND, PANAMA CANAL ZONE*

By M. Graham Netting

(Plate XIV)

During March 1934, Mrs. Netting and I spent twenty-six days on Barro Colorado Island, which is situated in Gatun Lake in the Panama Canal Zone. This island, which has been a natural reservation since 1922, is the seat of a Biological Station which is maintained under the able directorship of Dr. Thomas Barbour, under the auspices of the National Research Council. Every scientist who visits the island leaves with a deep appreciation of the foresightedness of Dr. Barbour, and the wisdom of the National Research Council, in initiating and sponsoring the only biological station in tropical jungle under the American flag. Similarly, every worker receives at the hands of Mr. James Zetek, the very helpful and energetic Resident Curator, more counsel and assistance than he can ever repay or adequately acknowledge.

During our short stay I did not attempt to collect large series of specimens since the herpetological fauna of the island is well known from the previous work of Dr. Barbour, Dr. Dunn, Mrs. Gaige, and others. I did endeavor, however, to collect one specimen of each species at every spot on the island at which I encountered it. Since my efforts were concerned especially with amphibians with a view toward determining accurately the distribution of the various species, most of my collecting was done at night, and the collecting of reptiles was secondary to the main purpose. A large collection of frogs, including twenty-two of the thirty-one island species, and representing

*I am indebted to my good friend and mentor, Dr. E. R. Dunn, who critically determined the lizards and snakes, and who, from the time he first stirred my interest in Barro Colorado, has given unstintingly from his wide knowledge of tropical conditions and faunas.

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many localities, was assembled. Analysis of this collection indicates that the streams of the island, on the bases of their distinctive frog populations, may be divided ecologically into five zones. Since the report on this collection is not yet ready for publication, it now appears desirable to report briefly upon the smaller reptile collection.

Surprisingly enough the collection of amphibians added no species to the island faunal list whereas the collection of reptiles, which totaled only sixty-four specimens, proved to contain new records. Fifty-seven species of reptiles were previously known to occur on Barro Colorado. My collection includes only sixteen species, but of this number three of the nine species of snakes proved to be new to the island. These additions increase the known reptile fauna to sixty species, of which number exactly half are snakes. The high percentage of unreported snake species in my collection, may be attributed to night collecting since each of these additions was secured at night. The collection is far too small to justify any statements as to the distribution of most of the species involved, but definite stations for each species are included here in the hope that this action will stimulate future workers to carefully document their specimens so that those which are added to museum collections in the future will be available for distributional studies. Each of the existing trails on the island has been named, and each trail has been marked at 100 meter intervals, which greatly facilitates the location of collecting spots. "Stations," as referred to below, indicate the number of such intervals from the origin of the trails named. It should be remarked, in this connection, that the naming of each stream on the island would be of inestimable benefit for future distributional work.

When Barro Colorado Island is compared with Trinidad, with which the author is reasonably well acquainted, the extremely small lizard population, considering numbers of individuals, of the former is little short of amazing. Snakes are somewhat more common on thickly populated, and mongoose-ridden, Trinidad than on Barro Colorado. However, many habitats are not represented on Barro Colorado; important rodent-attracting crops are not grown on the island; and protection is accorded to all of the birds and mammals, many of which are reptile predators.

TESTUDINATA

Kinosternidæ

Kinosternon leucostomum Duméril

Three specimens, C.M. 7700-02, of this Atlantic slope form were found in a steep-sided, leafy-bottomed pool near the headwaters of the large stream which crosses Abram Conrad trail near station 2. These turtles were taken after dark on March 21 in less than ten minutes even though the water was murky and waist deep. I was surprised to find the species so numerous and so easy to capture in a stream inhabited by at least one large Caiman.

LORICATA

Crocodylidæ

Caiman fuscus (Cope)

One young specimen was collected in the lowest pool of Allee Creek, near the laboratory dock, on March 9. This specimen, which was kept in a cage under our cottage, died while we were collecting at another part of the island. On our return our attention was called to its demise by circling vultures, which could not have seen the specimen. Furthermore, decomposition was not far advanced for the specimen preserved properly. Another small specimen was seen in the pool with the turtles mentioned above, and a specimen over five feet in length was observed about a hundred yards upstream from this pool.

SQUAMATA

Lacertilia

Gekkonidæ

Sphærodactylus lineolatus Lichtenstein

One specimen, CM 7672, was found on the wall of a building at the laboratory on March 11 at 11 A.M. Several other specimens were observed in the daytime moving about on the inner walls of buildings in the vicinity. These geckos are more diurnal than *Hemidactylus* or *Thecadactylus* but far less tolerant of direct sunlight than are some species of *Gonatodes*.

Iguanidæ

Anolis frenatus Cope

A sub-adult specimen, CM 4667, of this large Central American species was collected at Snyder-Molino trail, station 2, on the morning of March 10. A newly-hatched specimen, apparently referable to this species, was found sleeping on a tree leaf on the bank of Lutz Creek on the night of March 23. This young specimen, which has a total length of 109 mm., was uniformly green in color. Dr. E. R. Dunn informs me that this name must be used for the B.C.I. specimens which have previously[1] been referred to *A. squamulatus*, *A. longipes*, and *A. purpurescens*.

Anolis limifrons Cope

Thirty-two specimens of this extremely common lizard were collected at ten stations in widely separated parts of the island. Many specimens were taken at night while they were sleeping on leaves of plants and trees.

Basiliscus basiliscus (Linnæus)

The "moracho" probably occurs along the entire shoreline of the island, and inland along the larger streams as well. Although only the specimens listed below were collected, literally hundreds were observed. Two nests of hatched eggs were found, which Sylvestre Aviles, an excellent woodsman, insisted were those of this lizard. I was unable to prove the connection, but the nest situations indicated *Basiliscus* as the most probable species. The first nest, of seven eggs, was found on March 7 in a small cavity, in an eastwardly-facing vertical red clay bank, 56 inches above a dry stream bed and approximately ten yards from the lake shore. The eggs measured approximately 20x12 mm. and were white-shelled. The following day seven egg shells were found scattered on top of the ground beside the concrete steps leading from the dock to the laboratory, and only a few steps above the dock.

1 CM 7661 Laboratory dock, March 8.
2 CM 7676-77 shore at Barbour House, March 12.
1 CM 7679 Allee Creek, March 12.

[1]Barbour, T. 1934. Bull. M.C.Z., **77**: 147.

1 CM 7698 Abram Conrad trail, near station 2, March 21.
1 CM 7722 dock at Fuertes House, March 24.

Teiidæ

Ameiva festiva Lichtenstein

This species was observed frequently on the edge of the laboratory clearing, near the beginning of Barbour Lathrop trail, but because of the proximity to the laboratory no specimens were shot.

Ameiva undulata (Wiegmann)

This species proved to be less common than I had expected it to be. Only two specimens were collected, one, CM 7665, at Snyder-Molino trail, station 4, on March 10, and the other, CM 7678, at Thomas Barbour trail, station 13, two days later.

SERPENTES

Colubridæ

Xenodontinæ

Leptocalamus sclateri Boulenger

(Plate XIV, figure 1)

One specimen, CM 7683, was found in a litter of leaves and trash in a small depression in a steep bank about three feet above a wet ditch. This ditch was beside Barbour Lathrop trail between stations 3 and 4. The specimen was collected in the early evening of March 14 and would most probably have escaped observation completely had not the beams from our headlights picked up its striking white head. This specimen is the first to be taken on Barro Colorado Island.

Urotheca dimidiata (Cope)

The Lake trail is bisected by a large stream which falls rapidly toward the lake through a deep ravine with very steep clay banks and a rocky bed. One specimen, CM 7684, was captured about 8 P.M., March 15, as it was crawling over the leaves in a dry section of the stream bed. While I was engaged in grabbing and bagging this

specimen, I saw another about fifteen feet above the stream bed on one of the clay sides, and Mrs. Netting saw another high up on the opposite bank. Unfortunately, in spite of our best efforts to scramble up the slippery banks both of these specimens eluded capture. The alternating rings of blue-black and coral red of these examples were far too brilliant, in the light of our headlamps, for us to have any doubt as to their conspecificity with the specimen captured. This mention of the snakes "which got away" is included only to indicate that although the specimen at hand is the first to be taken on the island, the species cannot be considered rare.

Colubrinæ

Dendrophidion dendrophis (Schlegel)

One specimen, CM 7711, was collected on a dry stream bed near Fuertes House on the afternoon of March 24.

Imantodes cenchoa (Linnæus)

Three specimens were found on bushes at night, as follows:
1 CM 7694 Donato trail, station 4, March 16.
2 CM 7720-21 along stream near Zetek House, March 29.

Imantodes elegans (Boulenger)

The first specimen to be secured on the island, CM 7723, was collected at night along Allee Creek above Pearson trail, on March 30. In addition to the difference in color, this species differs from the preceding in having smaller vertebral scales, and in having three labials in contact with the eye instead of two.

Leptodeira annulata annulata (Linnæus)

One specimen, CM 7682, was taken on the night of March 13 on a stream bank near Raymond C. Shannon trail between stations 7 and 9. A second, CM 7685, was collected on the evening of March 15 on the bank of the stream which bisects Lake trail.

Phrynonax pœcilonotus shropshirei Barbour and Amaral

This was the only snake which I observed about the laboratory. The specimen, CM 7662, was taken from an orange tree near the laboratory on the morning of March 9, and CM 7680 was found crawling through the grass in front of the laboratory on the morning of March 13. Both of these specimens were of the reddish phase. A third specimen, CM 7696, with yellow markings, was caught by Cristobal Marquinez on the tiny island of Slothia on March 21. This specimen was kept for some time in a cage with several examples of *Kinosternon* where it frequently exhibited the defense reaction of the species. At such times the neck was inflated for about eight inches, thus displaying the yellow-marked scales, the neck was also flattened vertically, the lower jaw was swung to one side, and the mouth was held half open, and every few minutes the snake hissed or struck at the moving turtle.

Oxybelis acuminatus (Wied)

(Plate XIV, figure 2)

Four specimens were collected, between nine o'clock and noon, at the localities listed below. CM 7670, which measured 847 mm. in body length, contained a *Basiliscus basiliscus* which was 275 mm. in length from the forelimbs (head digested) to the tip of the tail.

1 CM 7660 Lake trail, March 8.
1 CM 7670 Allee Creek below laboratory, March 11.
1 CM 7695 David Fairchild trail, station 7, March 17.
1 CM 7697 Wm. Morton Wheeler trail, station 8, March 20.

Spilotes pullatus pullatus (Linnæus)

One "tigre," CM 7668, was collected on the afternoon of March 10 on Donato trail. This snake was in very poor condition, possibly due to a heavy infestation of ticks, of which over 200 were counted on its body.

EXPLANATION OF PLATE XIV

Photographs from life by M. Graham Netting

FIG. 1. *Leptocalamus sclateri* Boulenger, C. M. 7683.

FIG. 2. *Oxybelis acuminatus* (Wied).